

**Claims**

1. A primer composition for coating transparent materials, comprising:
- a) 5-90 parts by weight of a polyurethane containing a Brønsted salt;
  - b) 5-50 parts by weight of a polyepoxy resin; and
  - c) 1-40 parts by weight of a photochromic dye, based on 100 parts by weight of the total primer composition.
2. The primer composition for coating transparent materials according to claim 1, wherein the Brønsted salt is present in the polyurethane containing a Brønsted salt in an amount of 10-100 gram equivalents per  $1 \times 10^6$  g of the polyurethane.
3. The primer composition for coating transparent materials according to claim 1, wherein the polyurethane containing a Brønsted salt is a reaction product of an isocyanate with a polyol, the isocyanate and polyol being present in such an amount that the mole ratio between both functional groups of NCO and OH (NCO/OH) ranges from 0.5 to 3.0.
4. The primer composition for coating transparent materials according to claim 1, wherein the polyurethane containing a Brønsted salt is a reaction product of an isocyanate with a polyol, the isocyanate being selected from the group consisting of an aliphatic isocyanate, an alicyclic isocyanate, an aromatic isocyanate, a heterocyclic isocyanate, a blocked aliphatic isocyanate and a blocked

alicyclic isocyanate.

5. The primer composition for coating transparent materials according to claim 1, wherein the polyurethane  
5 containing a Brønsted salt is a reaction product of an isocyanate with a polyol, the polyol including: (i) a diol containing a Brønsted salt, (ii) a polyol generating a soft segment of polyurethane, and (iii) a polyol generating a hard segment of polyurethane.

10

6. The primer composition for coating transparent materials according to claim 5, wherein the diol containing a Brønsted salt is a reaction product of an aminodiol with a Brønsted acid.

15

7. The primer composition for coating transparent materials according to claim 6, wherein the aminodiol is selected from the group consisting of 2-amino-2-methyl-1,3-propanediol, N-(n-butyl)diethanolamine, 3-diethyl-amino-1,2-  
20 propanediol, N-(t-butyl)diethanolamine, N-methyldiethanolamine, N-phenyldiethanolamine and diethyl N,N-bis(2-hydroxyethyl)aminomethyl phosphonate.

8. The primer composition for coating transparent  
25 materials according to claim 6, wherein the Brønsted acid is selected from the group consisting of phosphonic acid, phosphinic acid and sulfonic acid.

9. The primer composition for coating transparent  
30 materials according to claim 5, wherein the polyol generating

a soft segment of polyurethane is selected from the group consisting of a polyester diol, a polyether diol, a polyacrylic diol and a polycarbonate diol.

5           10. The primer composition for coating transparent materials according to claim 5, wherein the polyol generating a hard segment of polyurethane is selected from the group consisting of 1,4-butanediol, 1,2-butanediol, 1,5-pentanediol, 2,4-pentanediol, 1,4-cyclohexanediol, 1,6-  
10 hexanediol, 2,5-hexanediol, 2,4-heptanediol; pentaerythritol and trimethylolpropane.

          11. The primer composition for coating transparent materials according to claim 1, wherein the polyurethane  
15 containing a Brønsted salt is a polyurethane reaction mixture containing an isocyanate and a polyol.

          12. The primer composition for coating transparent materials according to claim 1, wherein the polyepoxy resin  
20 is linear and has a molecular weight of 300-2,000 g/mole.

          13. The primer composition for coating transparent materials according to claim 1, wherein the photochromic dye is selected from the group consisting of benzopyran-,  
25 naphthopyran-, phenanthropyran-, indenonaphthopyran-, fulgide, spirooxazine-, and spiropyran-based compounds.

          14. A photochromic transparent material having a primer layer formed by coating and curing the primer composition  
30 according to any one of claims 1 to 13 on a surface of a

transparent material.

15. The photochromic transparent material according to claim 14, wherein the primer layer has a thickness of 0.1  $\mu\text{m}$  to 40  $\mu\text{m}$ .

16. The photochromic transparent material according to claim 14, wherein a hard coating layer is formed on the primer layer.

10

17. The photochromic transparent material according to claim 16, wherein the hard coating layer comprises at least one component selected from the group consisting of at least one inorganic oxide sol containing at least one element selected from the group consisting of Ti, Zr, Si, Al, Sn, Sb, Ta, Ce, La, Fe, Zn, W and In; a silane compound having no functional group; and an epoxy-containing silicone compound or hydrolyzate thereof.

20